

Analysis of energy intensity trends in APEC 2005-2018

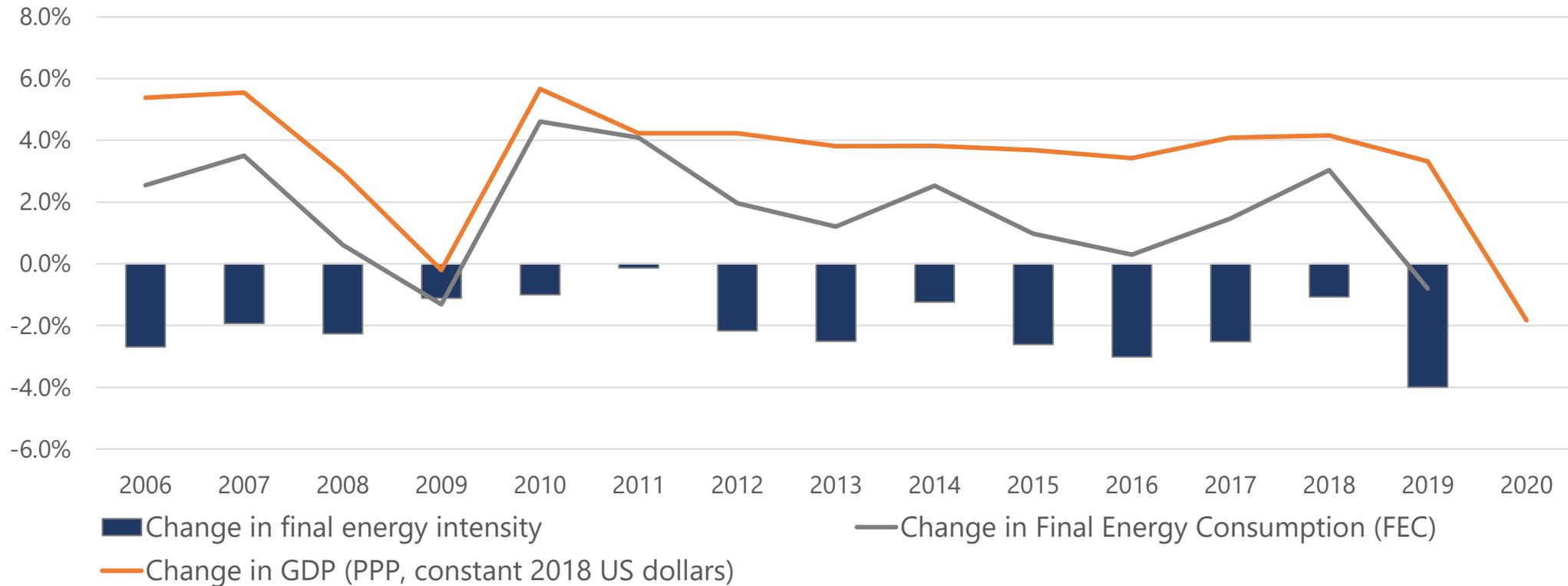
EGEEC 57

Hugh Marshall-Tate



Energy intensity – 2019 biggest improvement to date

Annual change in APEC final energy intensity, FEC and GDP 2006-19

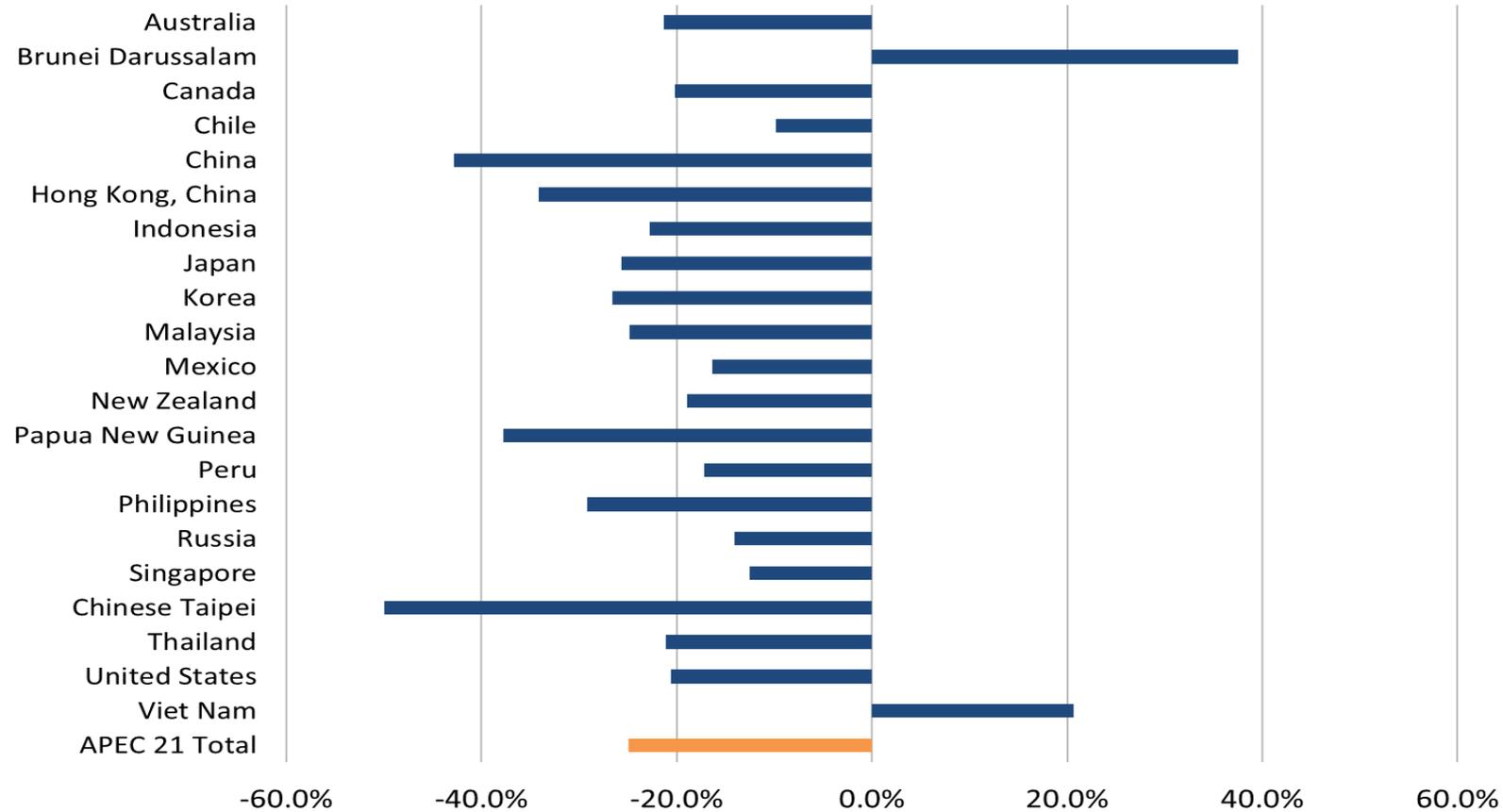


Final energy intensity has declined every year; 2019 has the biggest reduction since 2005.

Final energy intensity fell 24.9% between 2005 and 2019

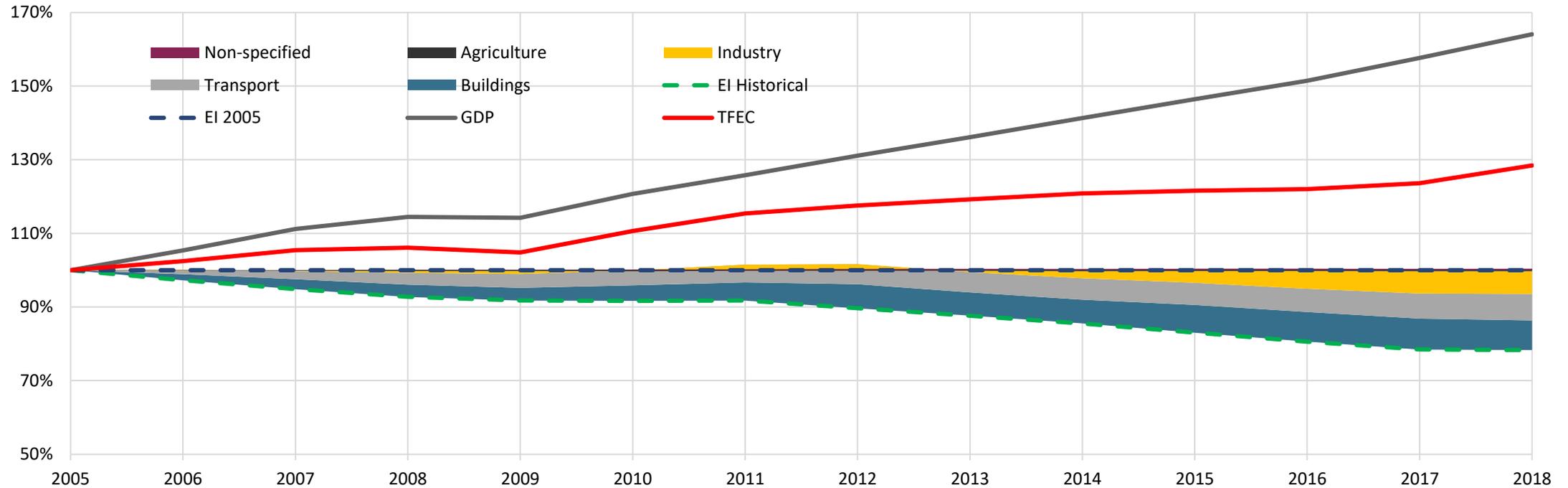
Energy intensity varies widely between economies

Energy intensity change 2005 to 2019 by Economy



Sources: EGEDA 2021 and APERC analysis

Subsector contribution on energy intensity from 2005–2018

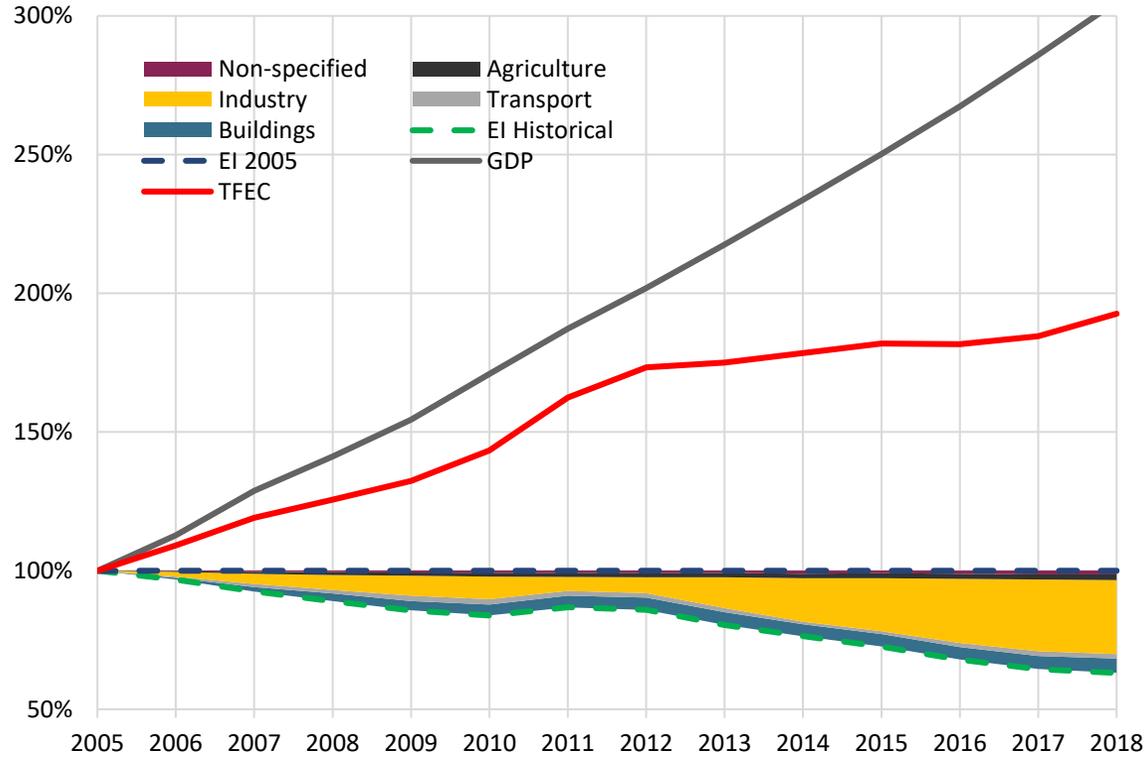


Sources: EGEDA 2021 and APERC analysis

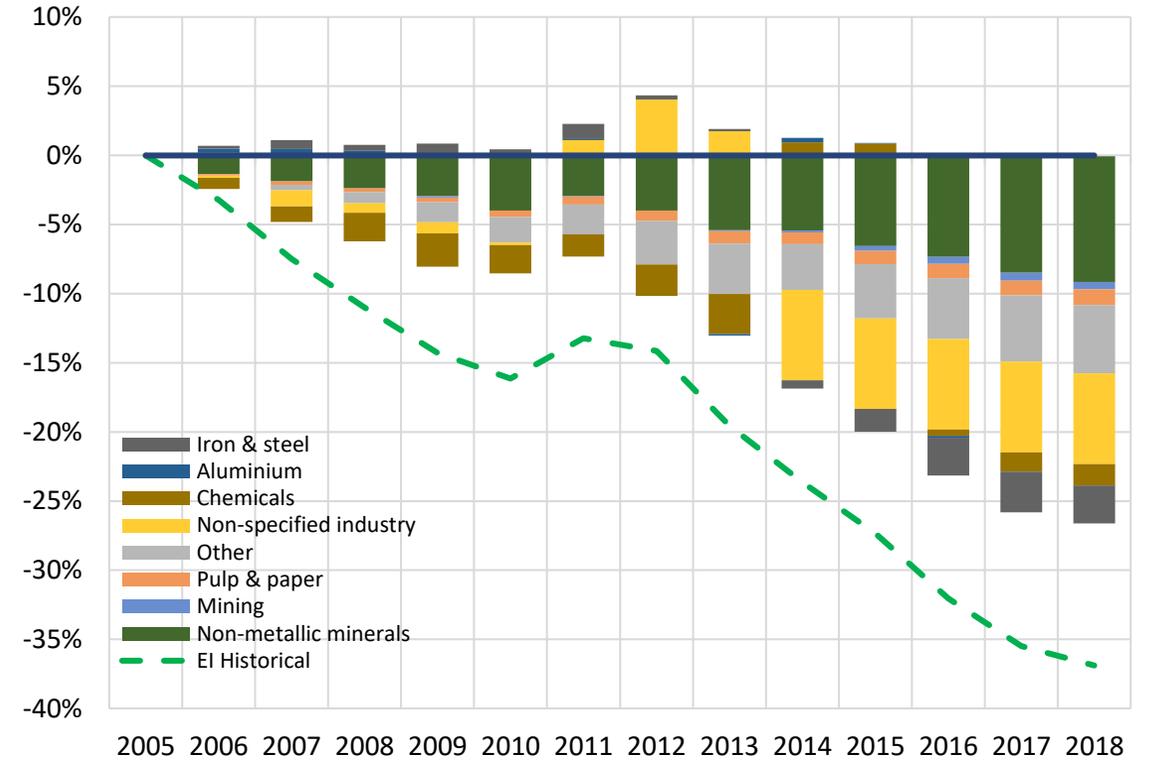
Each sector has made a similar contribution to the overall energy intensity reduction.

China Energy intensity improvements dominated by industry

Subsector contribution



Industry

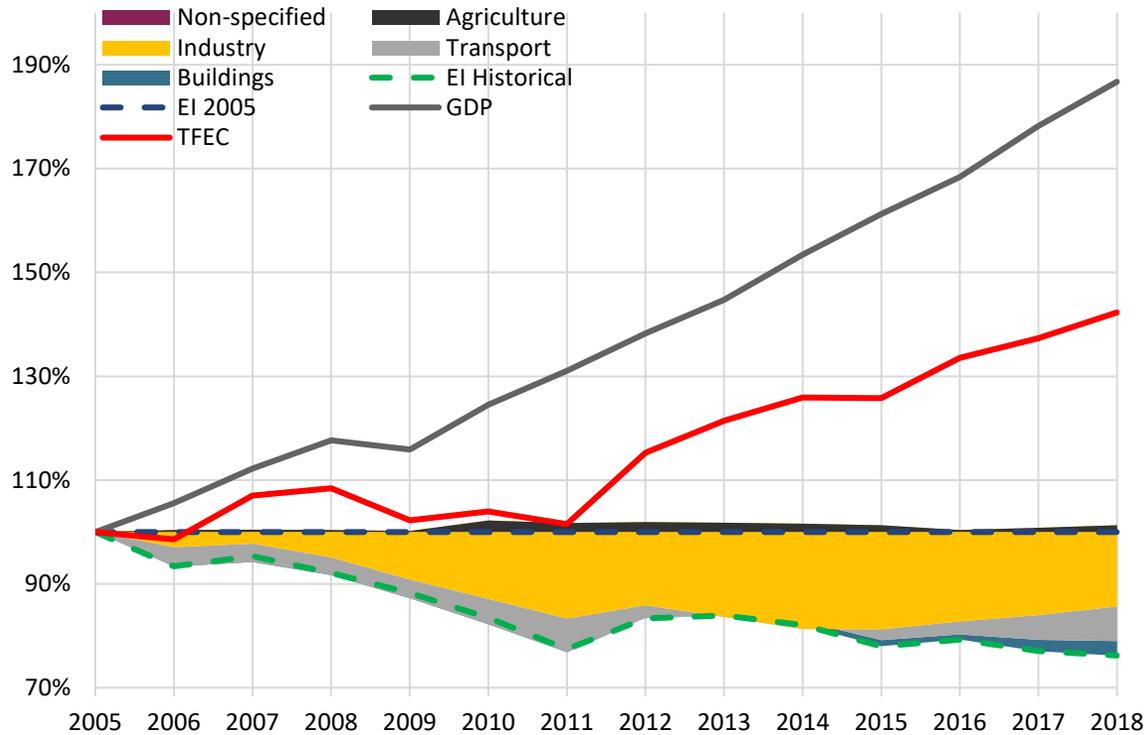


Sources: EGEDA 2021 and APERC analysis

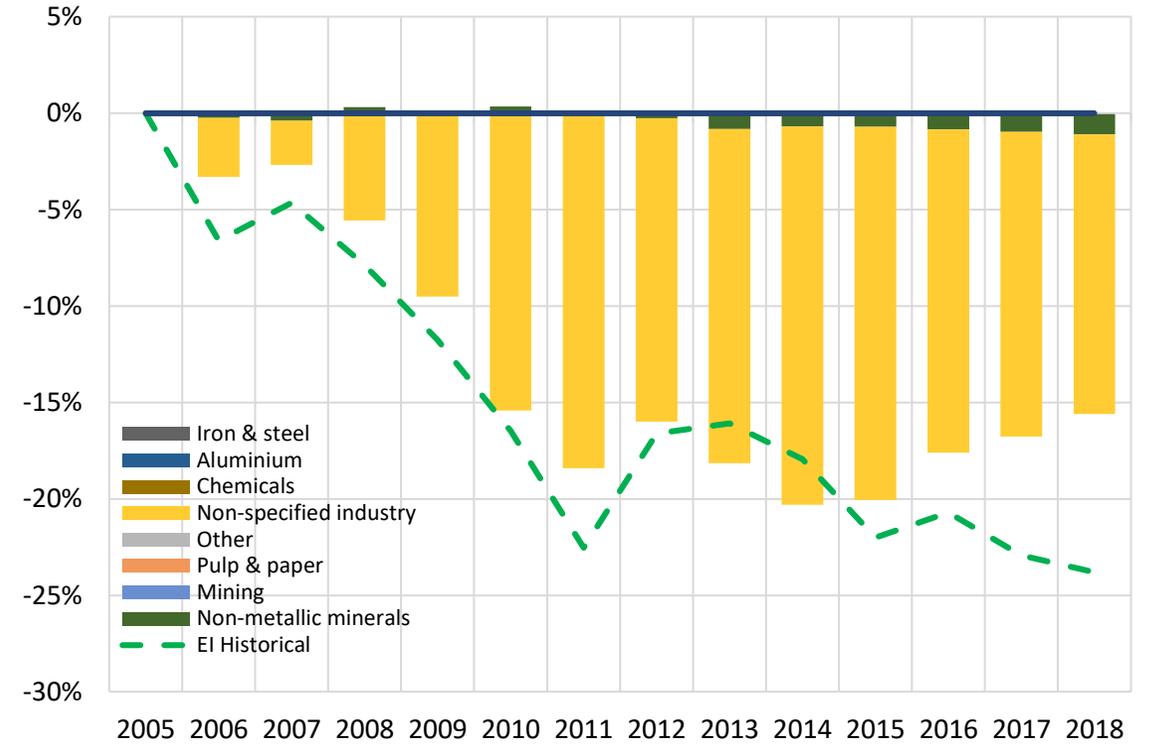
- Rapid improvements in the industry subsector have driven a 37% reduction energy intensity since 2005

Malaysia - Energy intensity improvements also dominated by industry

Subsector contribution



Industry

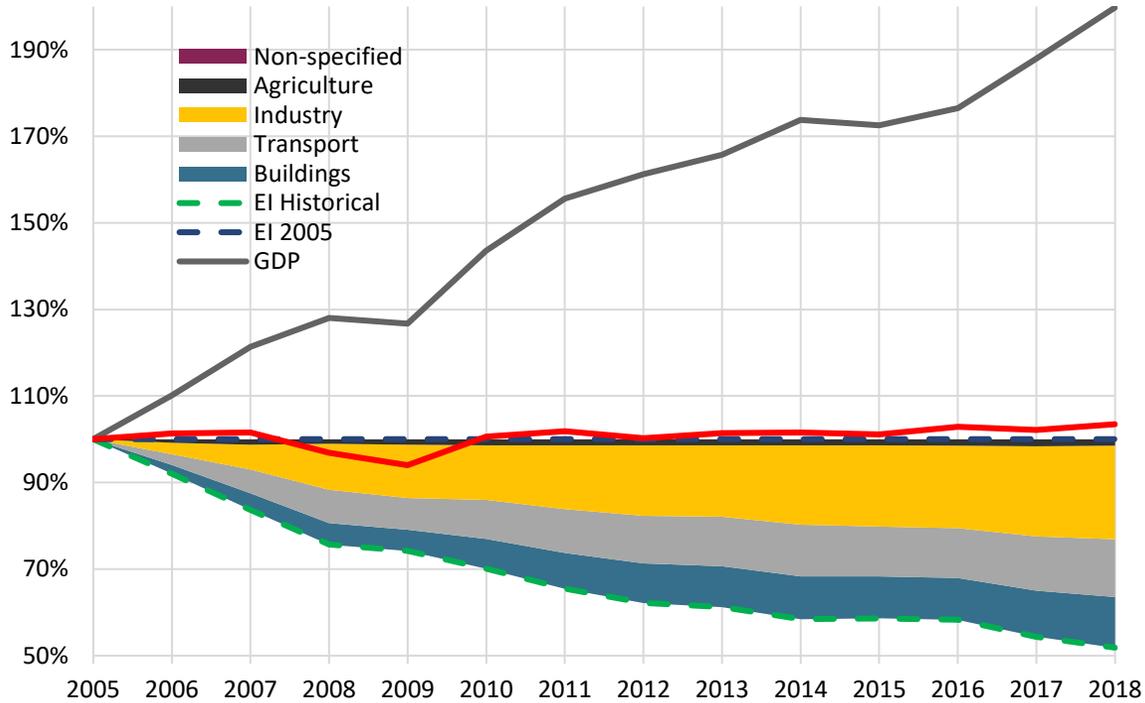


Sources: EGEDA 2021 and APERC analysis

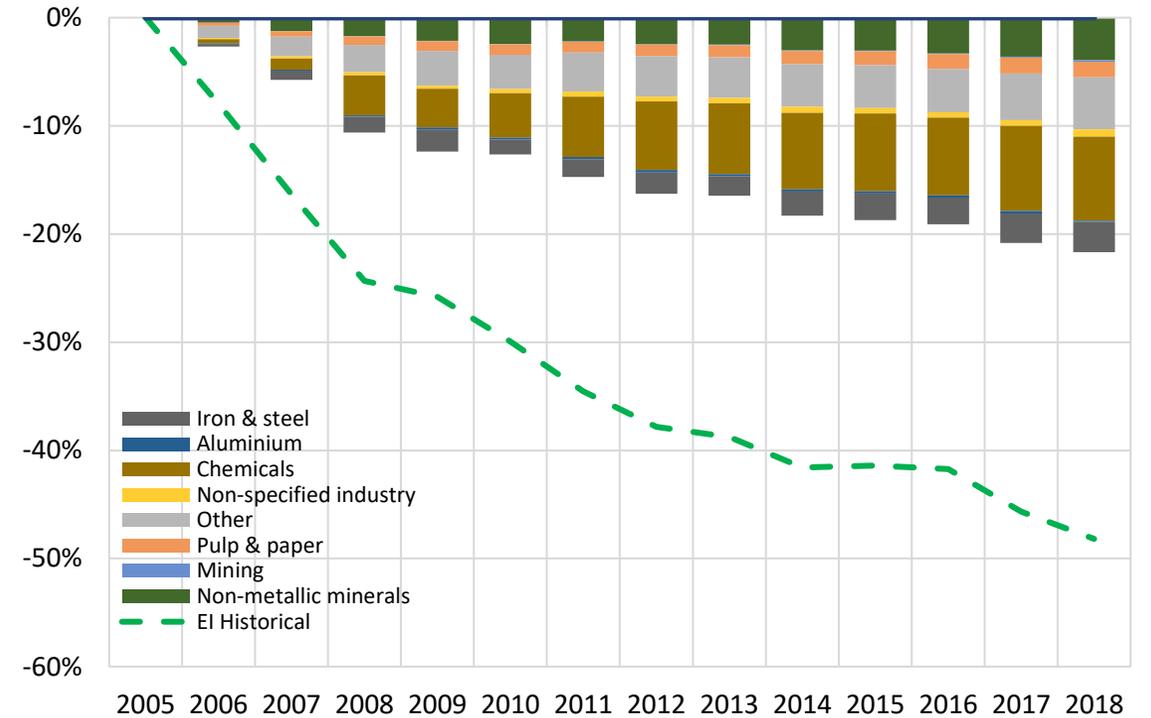
- In Malaysia industry has also led the energy intensity improvement, contributing 60% of the overall reduction of 24% from 2005.

Chinese Taipei - leading Apec energy intensity

Subsector contribution



Industry

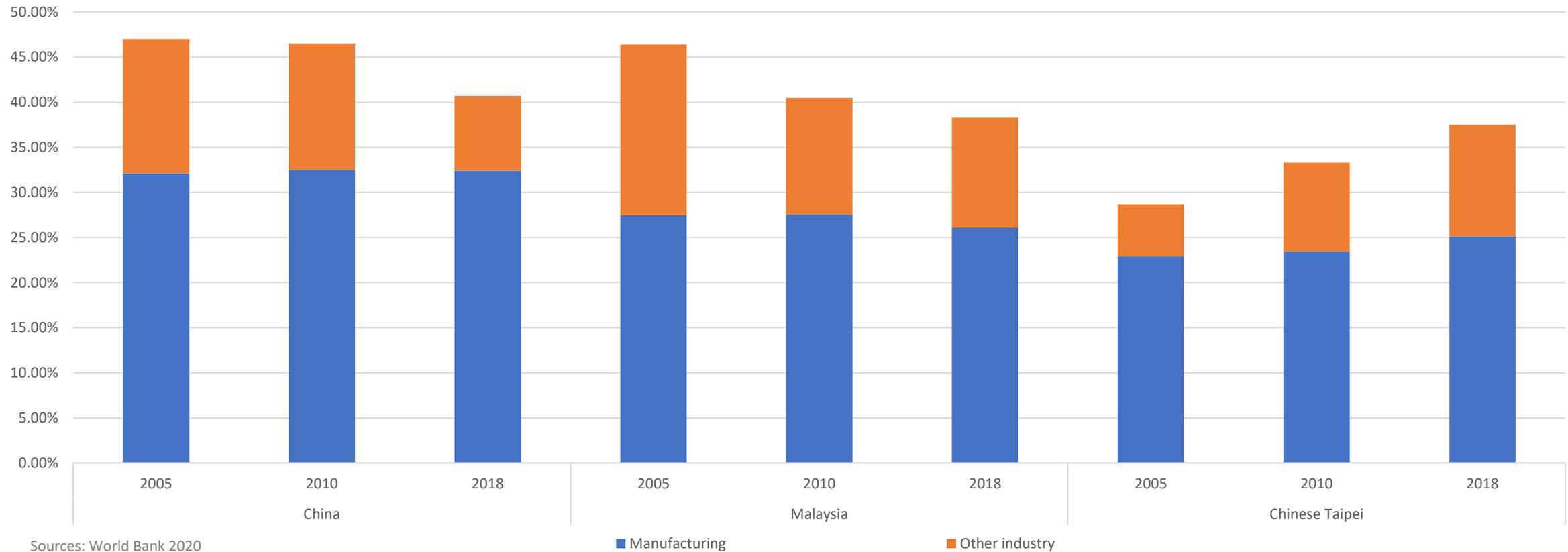


Sources: EGEDA 2021 and APERC analysis

- GDP has grown 200% since 2005 at the same time final consumption has been almost flat

GDP and economic structure

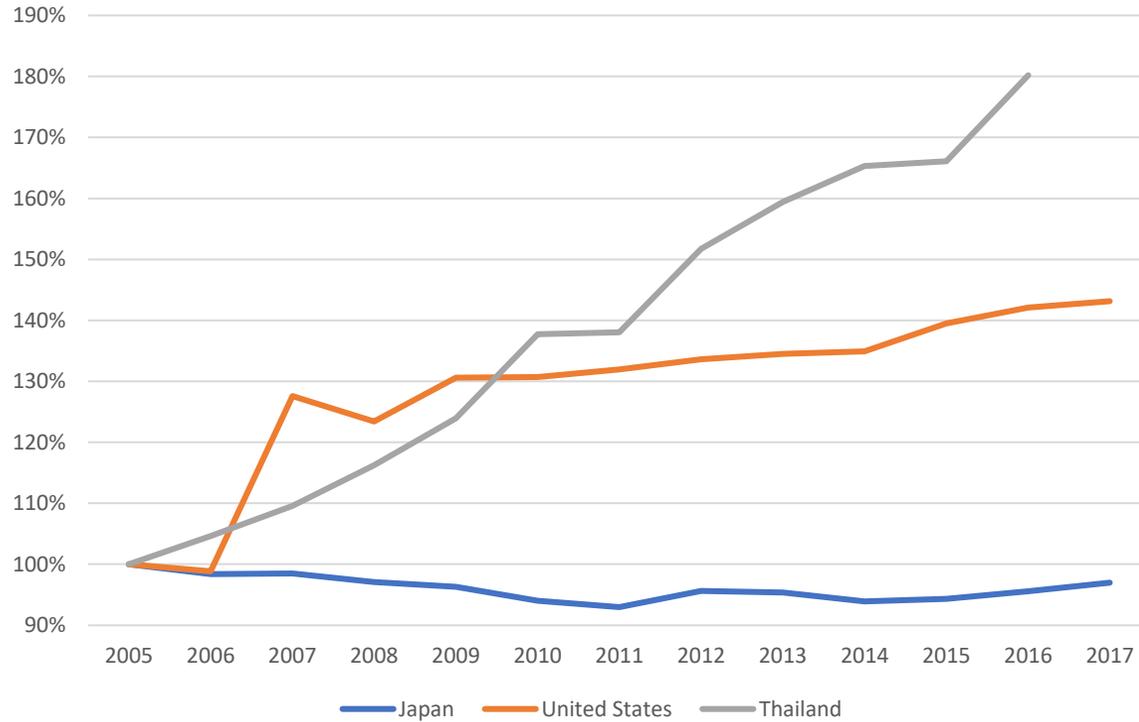
Share of industrial GDP in select APEC Economy's



- Structural economic changes play an important part in the improvements in energy intensity in China and Malaysia.

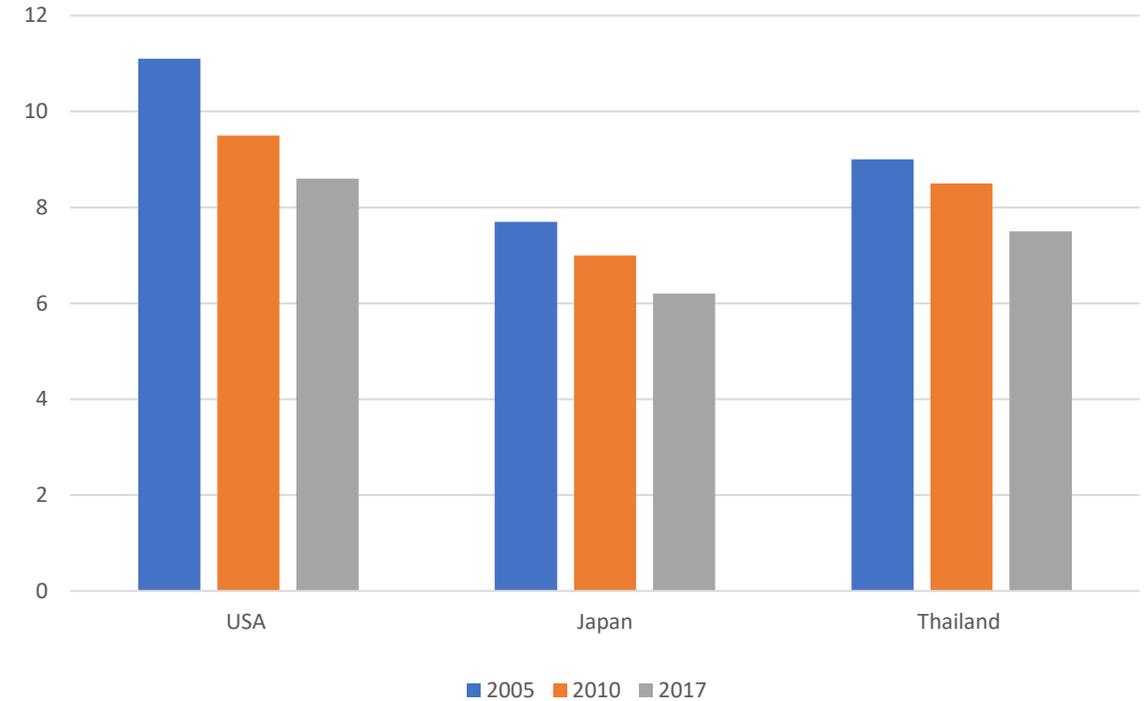
Sectoral analysis – Transport

Road Passenger kilometres change from 2005



Sources: OECD 2020, GFEI 2019, APERC

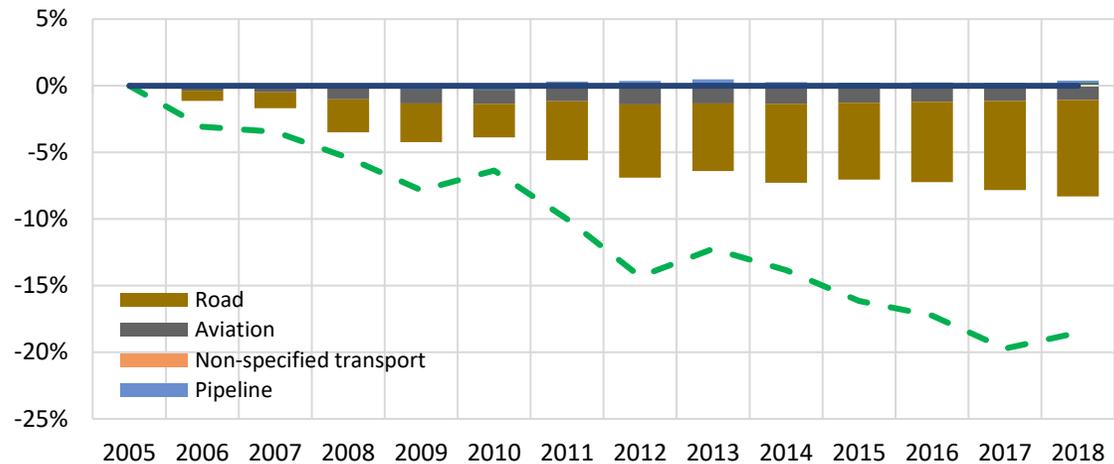
Average fuel consumption of passenger vehicles (Lge/100 km, WLTP)



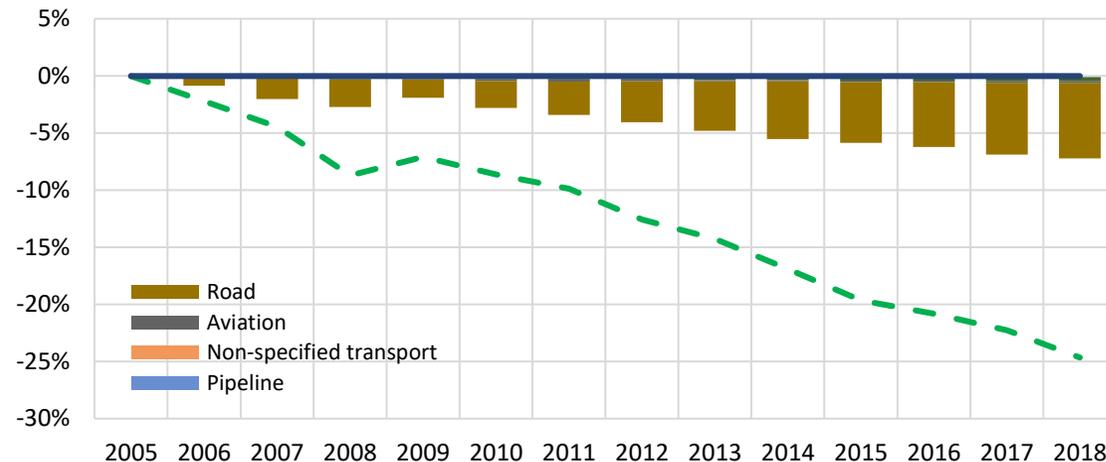
- Government policy and has driven fuel economy improvements in Japan, Thailand and the US

Transport sector energy intensity improvements in three economies

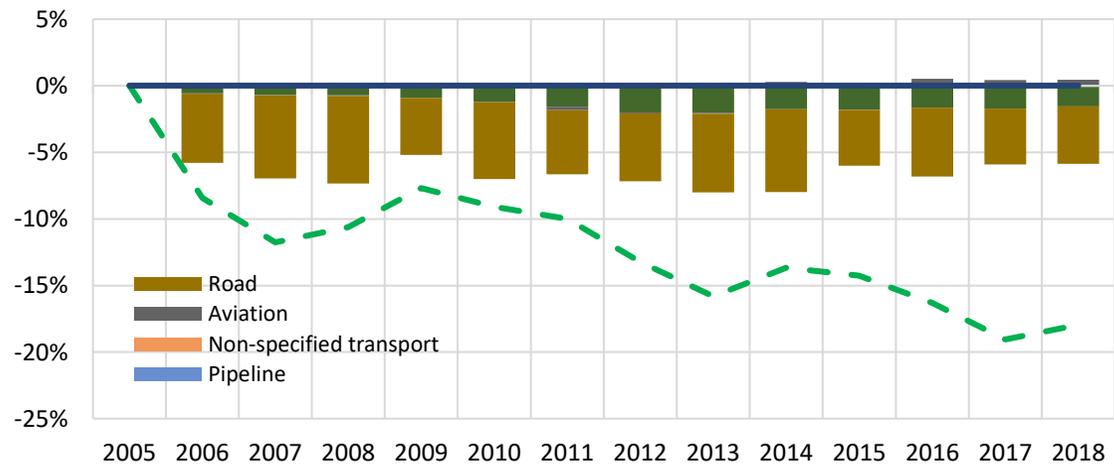
USA



Japan



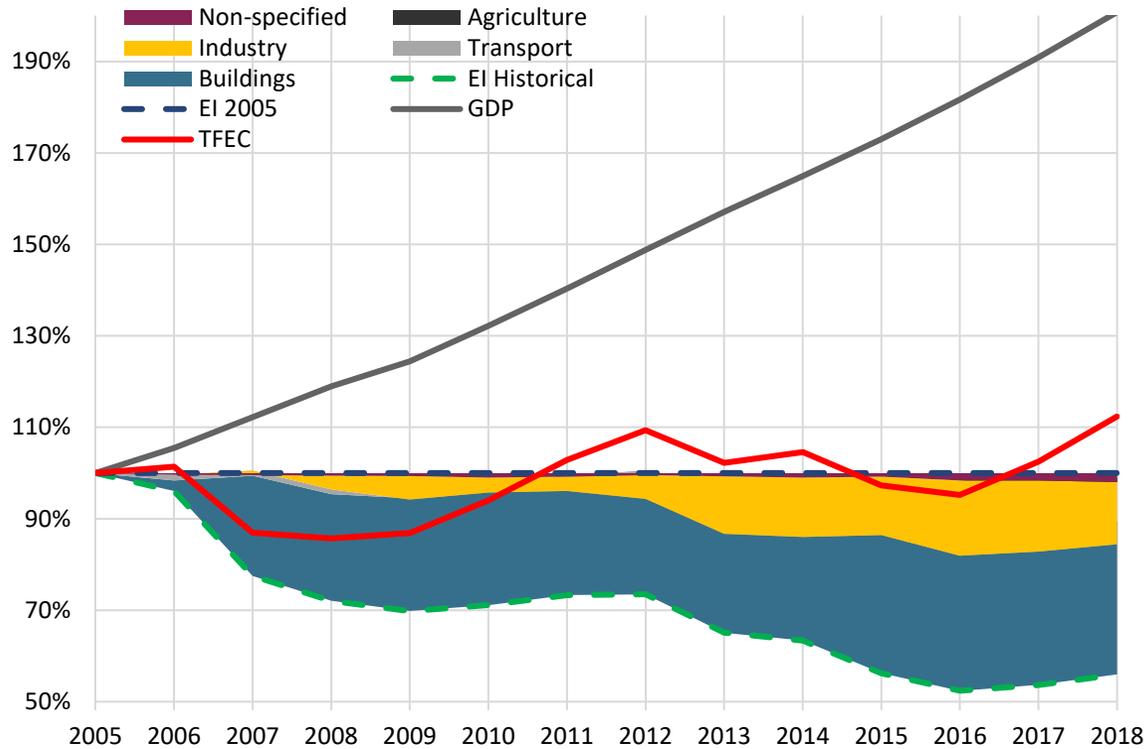
Thailand



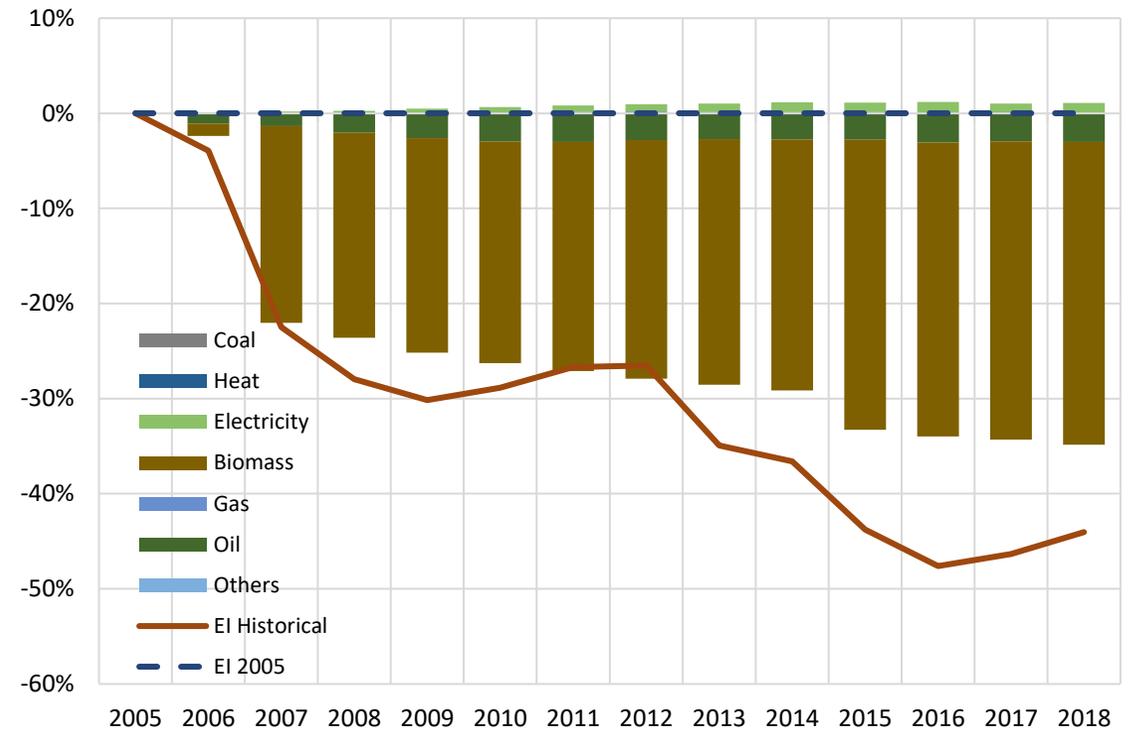
Sources: EGEDA 2021 and APERC analysis

Indonesia - improvements concentrated in budlings

Subsector contribution



Buildings

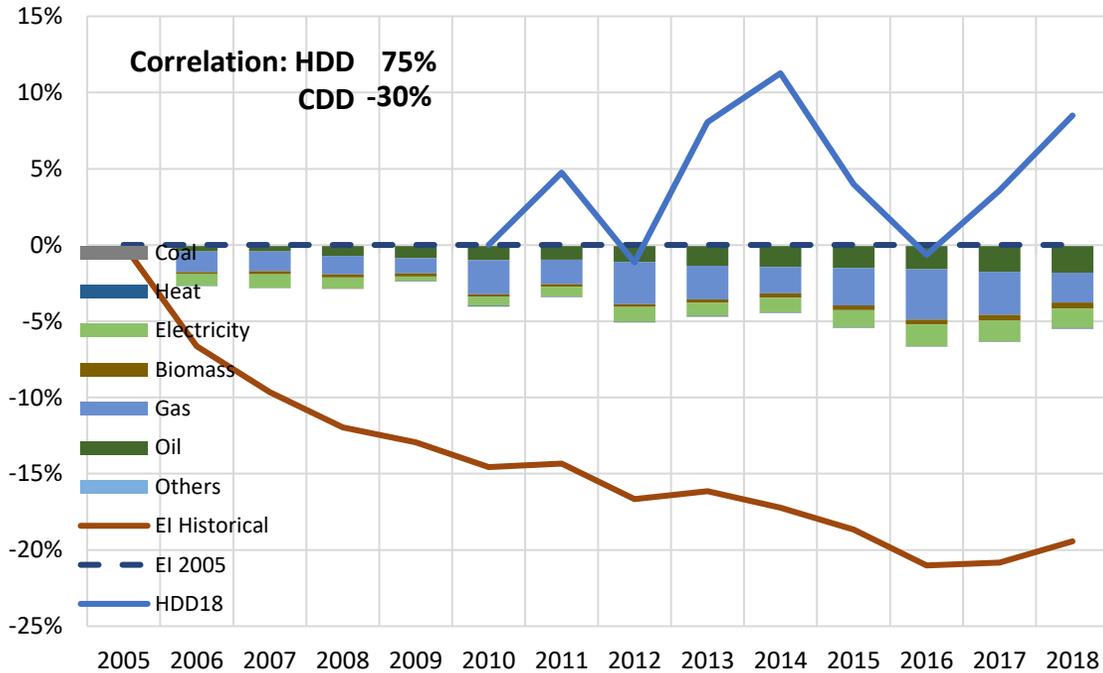


Sources: EGEDA 2021 and APERC analysis

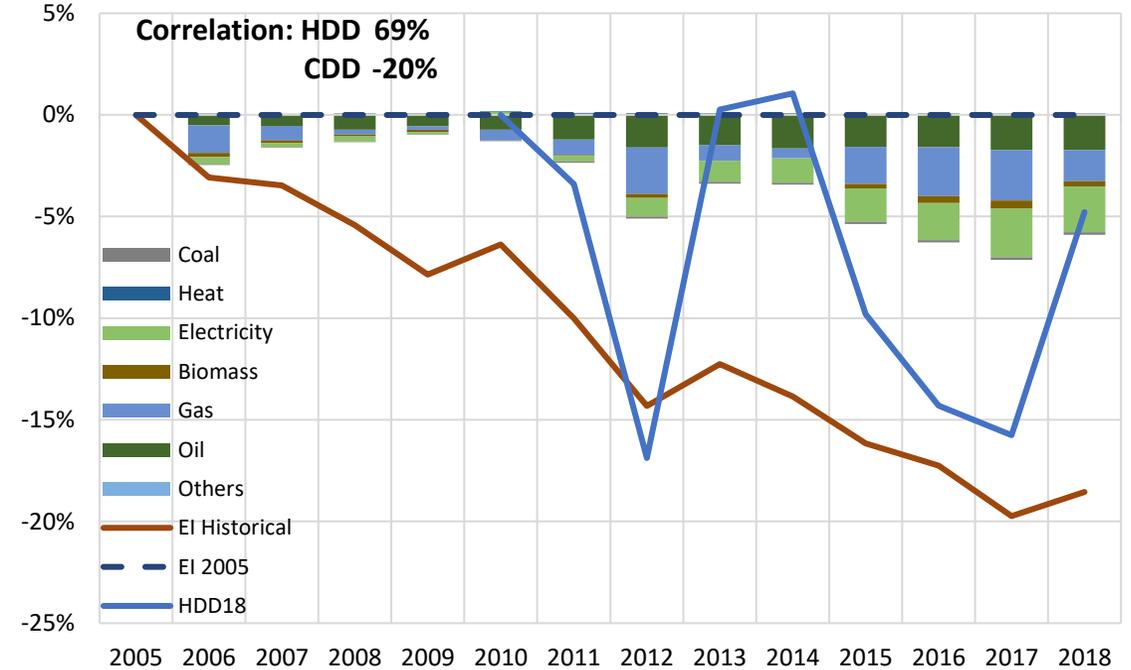
Residential buildings have been responsible for more than a 80% of reduction in economy wide energy intensity since 2005. This is mostly due to a switch from biomass to electricity

Buildings Canada and USA vs HDD

Canada



USA



- In Canada and the US, energy intensity in the building sector is correlated with the number of heating degree days below 18C

- Energy intensity and the drivers of energy intensity improvement vary widely between economies. In some economies improvements are concentrated in a single sector whereas in others improvements are more evenly distributed.
- Economic structure plays a large role energy intensity. However, economies that retain high shares of industrial GDP can still see improvements in energy intensity through energy efficiency and by moving up the industrial value chain.
- Vehicle fuel economy plays a vital role in reducing transport energy intensity. Policies such as CAFE standards, Fuel economy standards, and labelling programs have been used successfully in many APEC economies.
- Electrification and policies that target biomass consumption lead to significant improvements in residential energy intensity.
- The colder than average weather in North America in 2018 was one factor in the lower than average energy intensity improvement for Apec overall.

Thank You

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